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PATENT
Atty. Docket No. 87462-669925 (000710US)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Raymond Wellman, et al.

Application No.: 10/765,707

Filed: January 26, 2004

For: SLIP COLLAR

Confirmation No. 9283

Examiner: Van Sell, Nathan

Technology Center/Art Unit: 1783

APPELLANTS' BRIEF UNDER
37 CFR § 41.37

Mail Stop Appeal Brief
Commissioner for Patents
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Alexandria, VA 22313-1450

Commissioner:

This Appellants' Brief is responsive to the Final Office Action mailed on April 28, 2011. Further to the Notice of Appeal filed on July 28, 2011 for the above-referenced application, Appellants submit this Brief on Appeal pursuant to 37 CFR 41.37. An Amendment After Filing of Notice of Appeal pursuant to 37 CFR 41.33 is filed herewith.

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1. REAL PARTY IN INTEREST

The real party in interest of the subject patent application is ATS Products, Inc., the assignee of the present application.

2. RELATED APPEALS AND INTERFERENCES

None

3. STATUS OF CLAIMS

Claims 15, 28, 33-34, 36-54, 57-66, and 68-69 are pending and finally rejected. Appellants appeal from the rejection of all pending claims except the claims canceled in the Amendment After Filing of Notice of Appeal Pursuant to 37 CFR § 41.33, filed herewith.

4. STATUS OF AMENDMENTS

In a concurrently filed Amendment After Filing of Notice of Appeal Pursuant to 37 CFR § 41.33, Appellants have canceled claims 31 and 67 to reduce the number of issues on appeal. Claim 65 is amended to comply with a requirement of form expressly set forth in the previous Office Action and/or place the claims in better form for the consideration on appeal. Claim 66 is amended to place the claims in better form for the consideration on appeal. Applicants respectfully request entry of this amendment. Since the amendments do not affect the substance of the rejected claims, Appellants will presume that the amendment will be entered and have presented the claims in the following Claims Appendix, as though the amendment has been entered.

5. SUMMARY OF CLAIMED SUBJECT MATTER

In the following summary, Appellants have provided exemplary references to sections of the specification and drawings supporting the subject matter defined in the claims as required by 37 CFR § 41.37. The specification and drawings also include additional support for other exemplary embodiments encompassed by the claimed subject matter. Thus, these references are only intended to be illustrative and not restrictive.

In industries that use corrosive and hazardous chemicals, vapors from hazardous chemicals must be exhausted through leak-proof vapor ducts. These duct installations can consist of many thousands of feet of ductwork, which are connected by numerous joints. A leak-proof joint is required between each section of ductwork. The joint must remain leak proof after prolonged exposure to corrosive and hazardous chemicals and must not catastrophically fail in the event of heat or fire from inside or outside the ductwork. Installation of these duct systems is both expensive and time-consuming because the systems can be very large and contain numerous joints. Therefore duct joints that can be assembled more efficiently and cost-effectively are desired.

Embodiments of the invention include a duct assembly comprising a slip collar and sections that can be joined quickly and accurately, without the need for extensive aligning of the duct sections. In this manner, slip collars according to embodiments of the invention can be used to “self-align” two adjacent duct sections. The joint that is formed between connected duct sections is strong and has fire and chemical resistance, and provides for better joint strength and for a better barrier for fumes. By using the slip collars according to embodiments of the invention, ductwork can be installed quickly and accurately, and the duct network that is formed will be strong and reliable.

Some of the embodiments of the invention may be illustrated by the various independent and dependent claims described below.

Independent claim 15

Claim 15 is directed to a duct assembly comprising a slip collar, a first duct, and a second duct (paragraph [0023], lines 15-16). The slip collar comprises a tubular outer wall portion, a tubular inner wall portion, and an intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion (paragraph [0024], lines 21-24), which form an integral, one-piece structure (paragraph [0042], lines 25-27) made of a fiber reinforced plastic material (paragraph [0025], lines 28-32). The thickness of the outer wall portion is between about 3/16-inch to about 1-1/2 inches (paragraph [0036], lines 22-23). The slip collar further comprises a first slot region defined by the tubular outer wall portion and the tubular inner wall portion, and a second slot region defined by the tubular outer wall portion and the tubular inner

wall portion (paragraph [0024], lines 25-27), and the first and second slot regions face away from each other (paragraph [0042], lines 27-29). A first adhesive composition is placed in the first slot region, and a second adhesive composition is placed in the second slot region (paragraph [0027], line 13). The tubular wall outer portion includes a curved section including apertures with set screws which are disposed in the apertures (paragraph [0032], lines 24-26). The first duct includes a first end that is inserted into the first slot region, and the second duct includes a second end that is inserted into the second slot region (paragraph [0032], lines 29-30). The first and second ducts also comprise a fiber reinforced plastic material and have a constant diameter (paragraph [0046], line 27).

Independent claim 36

Claim 36 is directed to a duct assembly comprising a slip collar and a duct (paragraph [0059]). The slip collar comprises a tubular outer wall portion, a tubular inner wall portion, and an intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion (paragraph [0059], lines 5-6). The thickness of the outer wall portion is between about 3/16-inch to about 1-1/2 inches (paragraph [0036], lines 22-23). Each of the tubular outer wall portion, the tubular inner wall portion, and the intermediate portion comprise a fiber reinforced plastic material (paragraph [0059], lines 12-13), and form an integral one-piece structure (paragraph [0042], lines 25-27). The slip collar further comprises a slot region defined by the tubular outer wall portion and the tubular inner wall portion (paragraph [0059], lines 7-9). A first adhesive composition is placed in the slot region (paragraph [0027], line 13). The tubular outer portion includes a curved section comprising apertures with set screws which are disposed in the apertures (paragraph [0032], lines 24-26). The duct comprises a first end section, made of a fiber reinforced plastic material and having a constant diameter that is inserted into the slot region (paragraph [0046], line 27). The set screws contact the first end section of the duct to secure the first end section of the duct to the slip collar (paragraph [0060], lines 17-21).

Dependent claim 40

Claim 40 depends from claim 36 and additionally recites: "...wherein the tubular inner wall portion comprises a fluoropolymer material." (paragraph [0038], lines 29-31).

Dependent claim 66

Claim 66 is dependent on claim 65, which is dependent on claim 15.

Claim 65 depends from claim 15 and additionally recites: “wherein the set screws are cone-shaped set screws with a cone-shaped tip and a tightening end.” (Figure 1, paragraph [0060]).

Claim 66 depends from claim 65 and additionally recites: “wherein the cone-shaped tips of the set screws, when tightened at the tightening ends, extend into the first slot region and contact an outer surface of the first duct to secure the first end section of the duct to the slip collar while a first adhesive composition disposed in the first slot region cures.” (Figure 1, paragraph [0060]).

Dependent claim 69

Claim 69 depends from claim 36 and additionally recites: “...wherein the apertures extend inward toward the center of the tubular outer portion.” (Figure 1, paragraphs [0032] and [0060]).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. 35 USC 112, 1st paragraph

In the final Office Action mailed on April 28, 2011, on page 2, claim 69 is rejected under 35 USC § 112, second paragraph, as allegedly being indefinite.

B. 35 USC 103

In the final Office Action, claims 15, 36, 66, and 69 were rejected under 35 USC § 103 as being obvious over van Vliet (US 4,099,749) in view of Wellman (US 2002/0017333), Jacobson (US 6,213,522), Thomas (US 4,699,177), and Williams (US 5,961,154).

Claim 40 is rejected under 35 USC § 103 as being obvious over van Vliet in view of Wellman, Jacobson and Thomas as applied to Claim 36, and further in view of Nishio (US 6,045,164).

C. Claims separately argued on appeal

For purposes of this Appeal, Appellants would like to separately argue the patentability of independent claims 15 and 36 and dependent claims 40, 66, and 69. Claims 28, 31-34, 47-51, 53-54, 58, 61, 63, and 65 may stand or fall with respect to claim 15. Claims 37-46, 52, 57, 59, 60, and 68 may stand or fall with respect to claim 36. No admissions are made by the groupings of claims, and Appellants reserve the right to pursue features in any of the claims in continuation applications.

7. ARGUMENT

A. 35 USC § 112, 2nd paragraph

In the final Office Action mailed on April 28, 2011, on page 2, claim 69 is rejected under 35 USC § 112, second paragraph, as allegedly being indefinite. Applicants respectfully disagree.

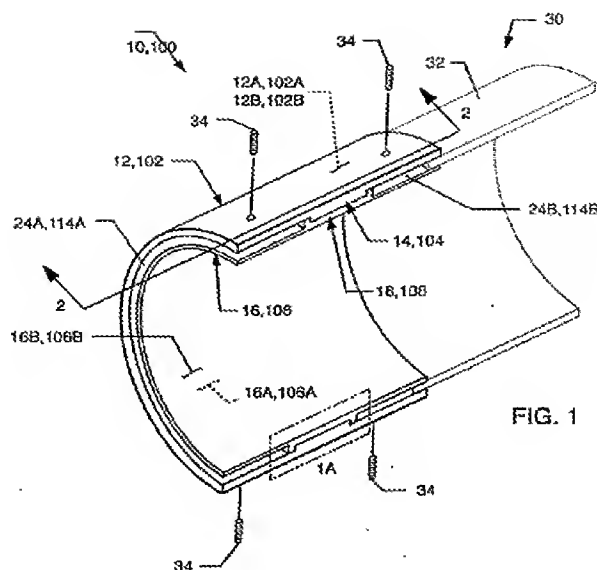
1. Claim 69 is not indefinite

Claim 69 recites: “The duct assembly of claim 36, wherein the apertures extend inward toward the center of the tubular outer portion.”

The Office Action alleges: “The term ‘aperture’ in claim 69 is used by the claim to mean ‘a hole that is capable of extending inward,’ which suggests the hole has sidewalls that intrude, while the accepted meaning is ‘a hole.’ The term is indefinite because the specification does not clearly redefine the term.”

Appellants respectfully disagree.

Claim 69 is definite to a person having ordinary skill in the art. If the scope of the claimed subject matter can be determined by one having ordinary skill in the art, the claim is not indefinite. MPEP 706.03(d). For example, Figure 1 illustrates an embodiment where “the apertures extend inward toward the center of the tubular outer portion”:



One having skill in the art viewing Figure 1A would recognize that the set screws 34 are inserted into “apertures” that “extend inward toward the center of the tubular outer portion.” The set screws 34, and lines between set screws 34 and the apertures, clearly show the direction of the aperture and show the apertures extending inward toward the center.

Moreover, the “tubular outer wall portion” has a thickness. For example, paragraph [0036] states that “the thickness of outer wall portion 12 of the slip collar can be from about 3/16-inch to about 1-1/2 inches.” A hole in any material with a thickness will necessarily have sidewalls and those sidewalls may have a direction. When an aperture or hole is made in the tubular outer wall portion, “sidewalls”—as used by the Examiner—are naturally formed. The tubular outer portion also has a center, i.e., the center of the half-circle slip collar shown in Figure 1A. Therefore, an aperture in the tubular outer wall portion can have “a hole that is capable of extending inward [and having] sidewalls that intrude,” as stated by the Examiner.

Accordingly, the limitation of claim 69 is not indefinite, and Appellants request that the rejection be reversed.

B. Independent claim 15

In the final Office Action mailed on April 28, 2011, claim 15 was rejected under 35 USC § 103 as being obvious over van Vliet in view of Wellman, Jacobson, Thomas, and

Williams. Obviousness has not been established for a number of reasons. Appellants will show that none of the cited references, alone or in combination, teach or suggest each and every element of claim 15.

1. The alleged 5-reference combination of van Vliet, Wellman, Jacobson, Thomas, and Williams relies on improper hindsight.

The obviousness rejection must combine no less than **five (5) references** (van Vliet, Shea, Jacobson, Thomas, and Williams) to reject the invention of even the broadest claim. Appellants submit that the rejections of record are erroneous and rely on improper hindsight. *See KSR International Co. v. Teleflex Inc.*: 82 USPQ2d 1385 (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.”). Here, the Office Action used improper hindsight to van Vliet, Wellman, Jacobson, Williams, and Thomas. According to the Court of Appeals for the Federal Circuit:

“It is difficult but necessary that the decisionmaker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art.” *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983).

Here, one viewing only van Vliet, Wellman, Jacobson, Thomas, and Williams would not have combined them in the manner alleged in the Office Action absent improper hindsight.

van Vliet is titled “Coupling Sleeve.” It describes a coupling member for coupling two sheet metal channels together for use in an air circulation of air conditioning system.

Wellman is titled “Electrostatic charge neutralizing fume duct with continuous carbon fiber.” It describes a self-grounding laminated dual wall fume duct for transporting corrosive vapors and gases.

Jacobson is titled “Device for Securing Adjacent Segments of Fibrous Glass Duct Work.” It describes a device for joining fibrous glass duct board.

Thomas is titled “Positionable Flanged Wall Pipe For Masonry Wall Installation.” It describes a separate and positionable flange member is used for connecting wall pipe to a masonry wall.

Williams is titled “Fume Duct Joint With Claiming Collar.” It describes an internal sleeve, a clamp, and bolts used to join ductwork.

Clearly, one viewing only van Vliet, Wellman, Jacobson, Thomas, and Williams would not have combined these references in the manner proposed in the Office Action, unless they had had the benefit of looking at Appellants’ specification first. For example, in rejecting claim 15, the Office Action essentially asserts that it would have been “obvious” for one to have: (1) looked to van Vliet, which describes a coupling sleeve for use in heating and air conditioning that uses “teeth” for coupling the sleeve, teaches away from using screws, and does not mention any adhesive or glue; (2) decided that the van Vliet’s coupling sleeve should be made of a “fiber reinforced material”; (3) extracted a teaching of “fiberglass reinforced plastic” and the recited thickness range of the outer wall portion from Wellman, when Wellman describes the thickness of duct but not the thickness of a slip collar; (4) decided that the combination of van Vliet and Wellman should be further modified by Jacobson, which does not show “a curved section including apertures” wherein “the screws are disposed in the apertures,” as asserted by the Office Action and refuted in the following section; and (5) then looked to Thomas, which shows “set screws” in a completely different context (i.e., a separate and positionable flange member is used for connecting wall pipe to a masonry wall).

Clearly, this proposed sequence of events is illogical and would not have been “obvious” to a person of skill in the art at the time of the invention by looking only at van Vliet, Wellman, Jacobson, Thomas, and Williams, without looking at Appellants’ disclosure. Rather, the proposed sequence of events could have only resulted from improper hindsight in view of Appellants’ disclosure, picking and choosing isolated disclosures from the prior art to meet the claims without regard to what the prior art actually teaches or suggests.

For example, this combination would have to ignore van Vliet's express requirement that the "construction is simple" and that the "aim" of van Vliet's invention was to **avoid the use of "screw bolts, rivets, welded joints etc."** Col. 1, lines 5-16. One of skill in the art would not have modified van Vliet, as alleged in the Office Action. van Vliet uses a "sleeve" in conjunction with a "loose resilient strip having a plurality of upwardly and downwardly obliquely protruding teeth formed integrally from said strip." van Vliet, Abstract; Fig. 4. The sleeve and the strip have teeth that face in opposite directions and the "teeth ... engage and lock said duct element to said coupling sleeve." *Id.* van Vliet explicitly avoided using "screws" so that the coupling sleeve was more simple. *See* Col. 1, lines 5-16.

Moreover, the Examiner's rationale for combining Thomas's set screws with the teachings of van Vliet, Wellman, Jacobson, and Williams is faulty. On page 6 of the Office Action, Examiner states

It is well established in the art that set screws provide securing means where the head of the screw is not exposed at the surface, thereby providing a smooth surface absent of protrusions.

Therefore, it would have been obvious to one having ordinary skill in the art at the time Applicant's invention was made to select set screws and adhesive for the coupling sleeve of van Vliet, as taught by Thomas, in order to avoid having protrusions snag near by objections.

This rationale is faulty for a number of reasons. First, set screws are not necessarily countersunk, as alleged by the Examiner. One having skill in the art would recognize a set screw as a type of screw used to secure an object within or against another object. Second, nothing in any of the references suggests that "smooth surface" of the slip collar above the set screw and or avoiding "having protrusions snag near by objects" is desirable or intended. The teaching or suggestion to make the claimed combination must be found in the prior art, and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

The combination of these five references, as alleged in the Office Action, would not have been made without looking at Appellants' disclosure first. Since the alleged combination would not have been made without knowledge of Appellants' specification, the

rejection is based on improper hindsight. For at least this reason, Appellants submit that the Office Action failed to meet its burden to support the legal conclusion of obviousness with respect to claim 15 and those dependent thereon. Therefore, claim 15 and all claims dependent thereon should be allowed.

2. Neither van Vliet nor Jacobson nor the other cited references teach or suggest, *inter alia*, “curved section including apertures,” as recited in independent claim 15.

Even the 5-reference combination used to reject claim 15 fails to teach or suggest each and every limitation of claim 15. Independent claim 15 recites the following limitation:

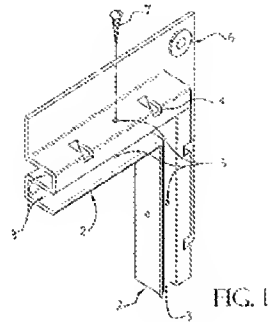
wherein the tubular wall outer portion includes a curved section including apertures, and wherein set screws are disposed in the apertures

The Office Action acknowledges that van Vliet fails to teach or suggest these limitations. Office Action, page 5. To supply these missing limitations and reject independent claim 15, the Examiner relies on Jacobson. Specifically, on page 5 of the office action, the Examiner alleges that:

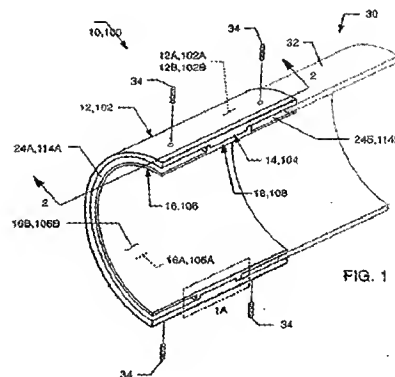
Jacobson et al. teach that slip collars comprise teeth-like projections to provide mechanical securement for an inserted duct work (col. 3, lines 19-21) and additional apertures on a curved section and wherein screws are disposed in the apertures to provide additional strength once the duct work is assembled (col. 2, lines 30-34 and col. 3, lines 22-23).

Appellants respectfully submit that the passages and accompanying figures of Jacobson that the Examiner cites do not, in fact, teach a curved section including apertures, as recited in claim 15. There are no “curved sections” at all disclosed by Jacobson. Therefore, there is no “curved section including apertures.” Rather, Jacobson is entirely directed towards square and rectangular ducts used for use in residential and commercial heating, ventilating, and air conditioning duct systems. See Col. 1, lines 40-43. The “corner member” shown in Figure 1 does not have a curved section with apertures; the apertures are in flat sections of the “corner member.”

Figure 1 of Jacobson is reproduced below and shows the “holes 5” in the flat section of the corner member:



Jacobson’s placement of the “holes 5” in the flat portion of the corner member is contrasted with the claimed embodiment here. Figure 1 of the present application is reproduced below:



As can be seen in Figure 1 of the present application, there are apertures in the slip collar. These apertures are clearly in a curved portion of the slip collar. The curved section is not flat, as shown in Jacobson. For at least these reasons, claim 15 and all claims dependent thereon should be allowed.

3. **The cited references do not teach or suggest, *inter alia*, “a first adhesive composition in the first slot region and a second adhesive composition in the second slot region,” as recited in independent claim 15.**

Moreover, even the 5-reference combination used to reject claim 15 fails to teach or suggest each and every limitation of claim 15. Independent claim 15 recites “a first adhesive composition in the first slot region and a second adhesive composition in the second slot region.”

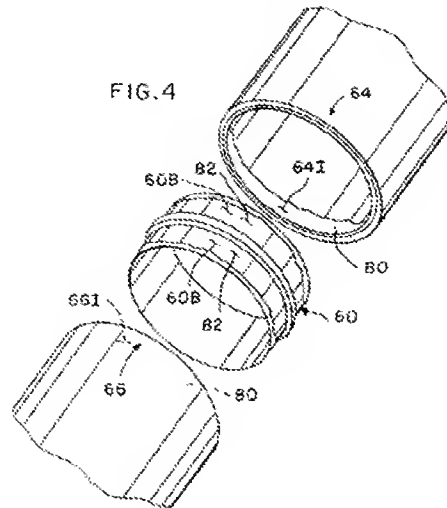
The Office Action admits that “van Vliet fails to teach that the assembly further comprising an adhesive between the slip collar and the duct, and around the set screws and in the slot region.” Office Action, page 6. To supply the admittedly missing limitation, the Office Action relies on Williams (col. 4, lines 2-4 and ref. #94 in Figure 7) to allegedly meet this limitation. Appellants respectfully disagree.

Williams discloses a sealant that includes epoxy, however, Williams does not disclose disposing an “adhesive composition” into the first and second “slot regions.” Williams discloses an internal slip collar having an outer surface with a central circumferential rib. Williams does not show “slot regions” at all because the joint is formed using an internal slip collar. Adjoining duct sections slip over internal slip collars, such as those in Williams. By contrast here, adjoining duct sections fit within slot regions formed by the tubular outer wall portion, tubular inner wall portion, and intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion.

As described in Williams at Col. 8, lines 11-18:

“FIG. 4 shows the first step in assembling the duct joint 72. A relatively thin layer 80 of a sealant which includes a settable admixture of curing agent and novolac epoxy resin having a putty-like consistency is applied around the perimeter of inner surfaces 64I, 66I of duct section end portions 64, 66, respectively. The sealant is also applied as a relatively thick layer 82 on the entire outer surface 60B of slip collar 60.”

Figure 4 of Williams is reproduced below:



The Examiner relies on the “continuous sealant layer 94” in Figure 7A for allegedly disclosing adhesive in a slot region. Figure 7A is reproduced below:

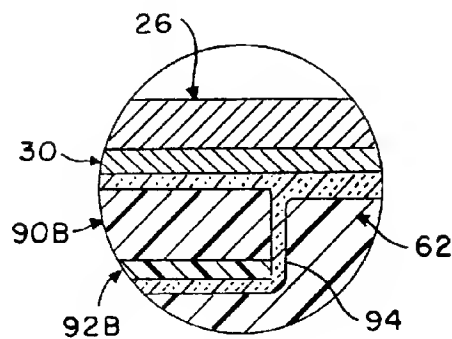


FIG. 7A

As shown in Williams’ Figure 7A, the “continuous sealant layer 94” is not disposed in a “slot region” of the slip collar. Rather, Williams “FIG. 7A shows how rib 62, inner skin 30, exterior laminate 90B [of duct section 70 in Fig. 7], and interior laminate 92B [of duct section 70 in Fig. 7] are bonded together by a continuous sealant layer 94.” Williams, Col. 8, lines 48-52. In Williams, the “continuous sealant layer 94” forms a seal between several different parts, for example, between: (1) the rib 62 and the inner skin 30, which is part of an exterior clamp; (2) the exterior laminate 90B of the duct section and the outer skin 30; (3) the rib

62 and the exterior laminate 90B of the duct section; and (4) the outer surface 60B of slip collar 60 (see Figure 4; not shown in Fig. 7A) and the exterior laminate 92B of the duct section. None of these areas are “slot regions...defined by the tubular outer wall portion and the tubular inner wall portion,” as recited in claim 15.

Embodiments of the present invention recite “a first slot region defined by the tubular outer wall portion and the tubular inner wall portion,” “a second slot region defined by the tubular outer wall portion and the tubular inner wall portion,” and “a first adhesive composition in the first slot region and a second adhesive composition in the second slot region.” For illustration, please refer to Figure 2 of the Specification, which is reproduced below:

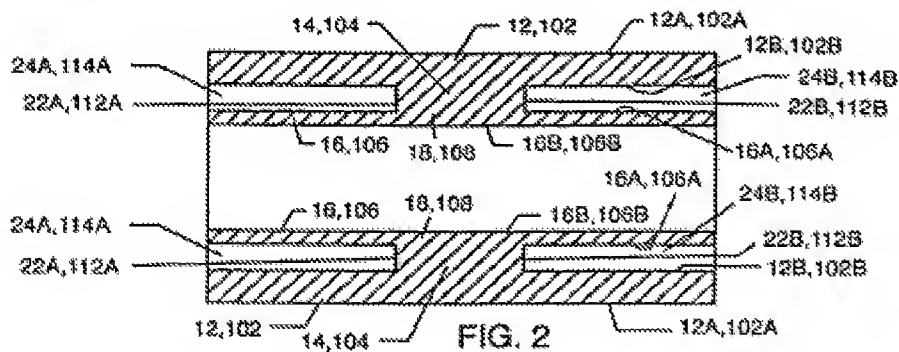


Figure 2 shows an outer wall portion (12, 102) and an inner wall portion (16, 106). Figure 2 also shows a first slot region (24A, 114A) and a second slot region (24B, 114B). “The end portions of the duct sections can be pre-coated with an adhesive sealant composition and/or the slot regions 24A, 24B, 114A, 114B may include the adhesive.” Specification, paragraph [0031]. As explained in the Specification of the present application, “an adhesive composition can be deposited in the first and second slot regions, and two sections of duct can be joined quickly and accurately, without the need for extensive aligning of the 15 duct sections. Thus, slip collars according to embodiments of the invention can be used to ‘self-align’ two adjacent duct sections.” Specification, paragraph [0027]. Indeed, the declaration of Dr. Joe Plecnik, as filed on March 1, 2006 (“the Plecnik Declaration”), which is discussed in more detail

below, states that the slot regions and disposing adhesive in the slot regions are among the advantages of the present invention.

For at least these reasons, claim 15 and all claims dependent thereon should be allowed.

4. The cited references do not teach or suggest, *inter alia*, that the “thickness of the outer wall portion [of a slip collar] is between about 3/16-inch to about 1-1/2 inches,” as recited in independent claim 15.

Additionally, even the 5-reference combination used to reject claim 15 fails to teach or suggest the “thickness of the outer wall portion [of a slip collar] is between about 3/16-inch to about 1-1/2 inches,” as recited in independent claim 15.

The Office Action admits that van Vliet “fails to teach the thickness of the outer wall portion of the coupling sleeve.” Office Action, page 6. To supply the admittedly missing limitation, the Office Action relies on Wellman to allegedly meet this limitation. Office Action, page 4 (“Wellman et al. further teaches the duct outer wall has a total of about 0.074 inch to about 0.638 inch. (page 4, para. 39).”). Appellants respectfully disagree.

The passage of Wellman cited in the Office Action discloses the thickness of “the duct outer wall.” Wellman, paragraph [0039] (“This completes assembly of the duct outer wall 50 (see FIG. 8) which has a total thickness within a range of about 0.074- to about 0.638-inch....”). It does not disclose the desired thickness of a slip collar or any other duct joint.

Other portions of Wellman disclose a “collar 82,” but there is no disclosure related to the thickness of an “outer wall portion.” Rather, Wellman paragraph [0041], states:

“As shown in FIG. 10, the collar 82 has a laminate construction, two inner layers 94, 96 of carbon ribbon-layers and resin admixture 30, and an outer layer 98 of glass ribbon-layers and resin admixture 30 of sufficient thickness to build the total wall thickness to a preselected dimension. Preferably, the combined **thickness of carbon layers 94, 96** is about 0.126- to 0.187-inch.” (Emphasis added)

The carbon layers 94, 96 are not outer wall portions. And, the thickness of Wellman’s “outer layer 98” is not disclosed. In any event, “Wellman’s “outer layer 98” is

different from the “outer wall portion,” as claimed. For at least these reasons, claim 15 and all claims dependent thereon should be allowed.

5. Declarations providing evidence that the claimed invention is not obvious.

Appellants have also submitted additional evidence of non-obviousness in the form of previously filed 37 CFR 1.132 Declarations of Jeff Shea, as filed on June 28, 2007 (“the First Shea Declaration”) and October 9, 2007 (“the Second Shea Declaration”), and Joe Plecnik, as filed on March 1, 2006 (“the Plecnik Declaration”). Even assuming, *arguendo*, that the Examiner can allege that the claims are obvious in view of the cited references, Appellants submit that the Declarations provide sufficient evidence to rebut any allegation of obviousness. In each of the Office Actions dated December 8, 2009, March 25, 2009 and October 27, 2010, the Examiner failed to even address the Shea and Plecnik Declarations as evidence of non-obviousness. The declarations sufficient to overcome any alleged *prima facie* case of obviousness because they provide evidence of (1) commercial success; (2) non-obvious advantages over the prior art, and (3) long felt need for the claimed invention.

i. Commercial Success

Commercial success of products falling within the claims of the patent that flow from the functions and advantages disclosed or inherent in the description in the specification is pertinent to the issue of non-obviousness. *In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564, 224 USPQ 617 (Fed. Cir. 1985). It is clear that the commercial success is due to the many structural and economic advantages of the claimed invention. Specifically, the First and Second Declarations of Jeff Shea show the commercial success of a product embodying claimed features of the invention and provide a nexus between the success and the invention. According to MPEP § 716.03(b)IV, objective evidence must be provided showing specific commercial success with relation to market evidence such as market share, time period during which sold, or what sales would normally be expected in the market. The First and Second Shea Declarations demonstrate that sales of ATS Products’ H-Collar™ line of joint products made according to embodiments of the claimed invention have increased significantly since their introduction (First Shea Declaration, paragraph 4; and Second Shea Declaration, paragraph 6), and that the increase is not

due to the ATS Products' dominant market share or extensive marketing efforts. (Second Shea Declaration, paragraph 4; First Shea Declaration, paragraph 7). Rather, the First and Second Shea Declarations show that increase in sales of the H-Collar™ line of joint products is due to the technical advantages and inventive features of the claimed invention. (Second Shea Declaration, paragraphs 5 and 7).

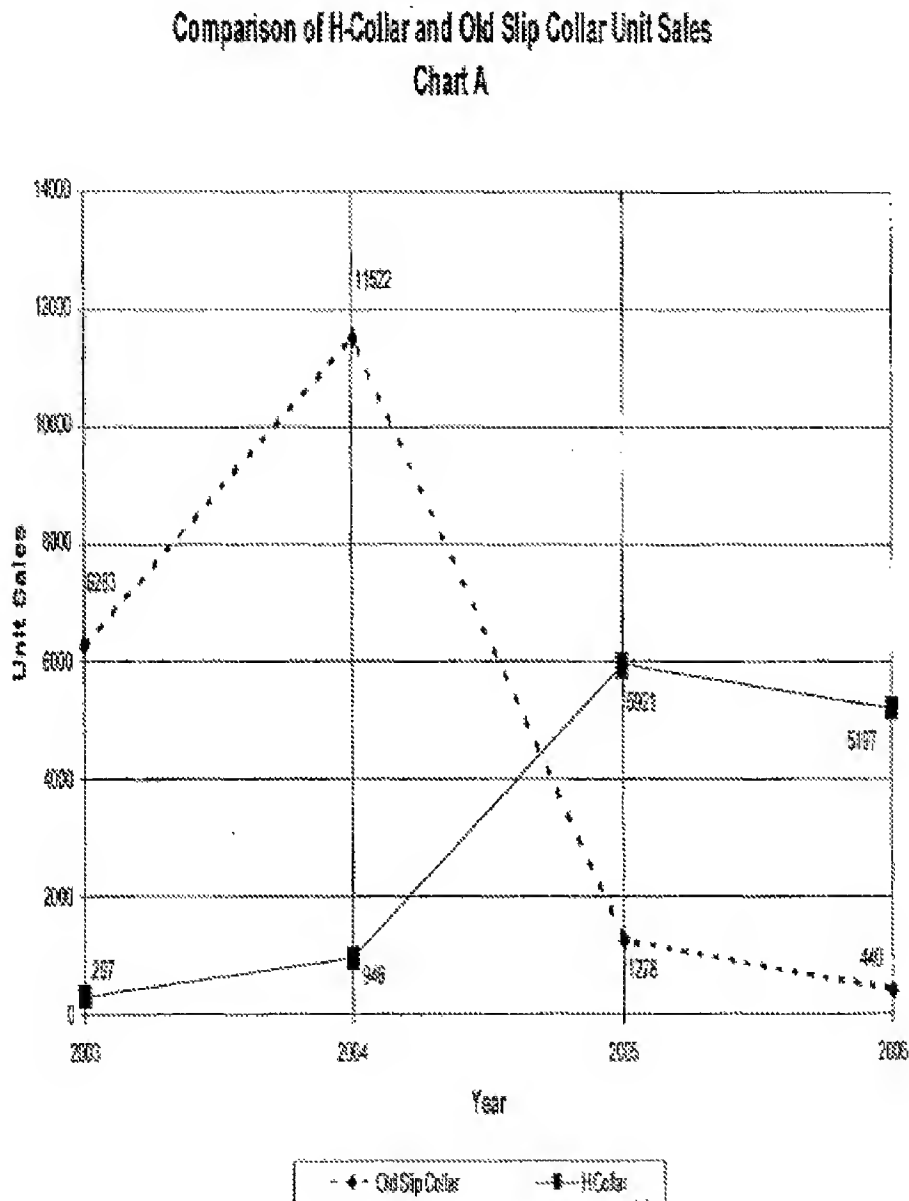
Specifically, the First Shea Declaration states the pending claims cover ATS Products' H-Collars™ line of joint products, and that "many of the features recited in the claims are responsible for the commercial success of the product." *Id.* ¶5. "[C]ustomer contractors have indicated that the ease and speed of installation and reliability of the resulting ductwork using the H-Collar™ joint products have allowed them to increase their productivity and profitability and that they are willing to pay a premium for such advantages." *Id.* More specifically, paragraph 4 of the First Shea Declaration shows the sales growth due to some of the claimed features of the embodiments in the H-Collar™ line of joint products:

Since 2003, ATS has sold more than 16,850 H-Collar™ so Sales have grown from about 367 units in 2003, to about 946 units in 2004, to about 5,921 units in 2005 and about 5,197 units in 2006. Approximately 4435 H-Collar™s have been sold in 2007 as of the date of this declaration. I believe that these sales are unexpectedly good in the duct industry.

The Second Shea Declaration ties these gross sales figures to (1) the time period when the product was sold, (2) what sales would normally be expected, and (3) market share – even though MPEP 716.03(b)IV only requires one of these three alternatives. First, as to the time period when the sales were made, paragraph 6 states:

These sales accompany the sales of fiber reinforced duct and other products necessary to install duct assemblies in semiconductor and other facilities that require light weight, yet chemical and fire resistant exhaust duct. This increase is in contrast to the decline in sales of ATS's old slip collar joint products, which represent a more traditional approach to duct joints. Between 2004 and 2006, sales of the old slip collar dropped from approximately 11,500 units annually to merely 440 units annually. (See Chart A).

Chart A of the Second Shea Declaration is reproduced below:



Second, as to what sales would normally be expected (i.e., sales of products embodying the old technology), paragraph 7 of the Second Shea Declaration states:

ATS has experienced an increase in H-Collar™ sales despite the availability of more dominant and traditional joining methods, similar to ATS's old slip collar (an example of which is shown as element 60 in U.S. Patent No. 5,961,154), that use less expensive collars but require significantly more time and labor. I believe that this shows that consumers recognize that the H-Collar™ has technical advantages over ATS's old slip collar.

Third, as to market share, paragraph 4 of the Second Shea Declaration states:

I believe that ATS fiber reinforced plastic duct and joint products account for less than 10-20% of all sales to this market sector. I further believe that the other 80% - 90% of the market is occupied by approximately 20-30 other manufacturers who provide various types of coated metal ducts. I believe that ATS does not occupy a dominant market position in the fire safe duct market and that there are other options for fire safe joints and duct assemblies that are available.

Additionally, paragraph 7 of the First Shea Declaration provides evidence that the commercial success was due to the inventive features of the H-Collar™ joint products, not extensive marketing efforts:

I also do not believe that the commercial success of the H-Collar™ joint products is due to extensive marketing efforts on behalf of ATS, but was rather due to the claimed inventive features of the H-Collar™ joint products.

As such, Appellants have demonstrated that the claimed features of the invention, as embodied in the H-Collars™, are responsible for the commercial success and have rebutted any alleged *prima facie* case of obviousness.

ii. Advantages over the cited references

The Plecnik Declaration, as well as the First and Second Shea Declarations, provide evidence that the embodiments of the claimed invention provide for non-obvious structural differences from and economic advantages over the duct assembly of the prior art. Dr. Plecnik provides third party expert evidence of structural advantages of the claimed invention. As evidenced by the Plecnik Declaration, embodiments of the invention provide for a number of non-obvious advantages over the prior art cited. These advantages include more efficient and

less costly duct assembly procedures, as well as stronger joints. For example, in paragraphs 5-8, Dr. Plecnik states the following:

5. I believe that the slip collar that is described in the present application has a number of advantages. Some advantages are provided at paragraph [0027] of the present application. Paragraph [0027] states:

The slip collars according to embodiments of the invention are especially useful for joining ducts. As explained below, in preferred embodiments of the invention, an adhesive composition can be deposited in the first and second slot regions, and two sections of duct can be joined quickly and accurately, without the need for extensive aligning of the duct sections. Thus, slip collars according to embodiments of the invention can be used to “self-align” two adjacent duct sections. In addition, the joint that is formed between connected duct sections is strong and can have fire resistance and chemical resistance. The slip collars include both inner and outer wall portions. They provide [for better] joint strength and for a better barrier for fumes than slip collars that are made from only a single layer of material. For example, in order for a gas inside of a duct assembly to leak from the interior to the exterior, a gas would have to traverse through the two wall portions of the slip collar and the walls of the duct sections that are being joined. Also, by using the slip collars according to embodiments of the invention, ductwork can be installed quickly and accurately. A duct network that is formed using the slip collars according to embodiments of the invention will be strong and reliable. Although slip collars for ducts are described in detail, embodiments of the invention may be used to join other types of tubular articles such as two sections of pipe.

I believe that these advantages make the slip collar described in the present application better than the duct joint described in Williams. Further advantages of the slip collar described in the present application over the duct joint described in Williams are provided below.

6. I believe that it takes less time to assemble ducts using the slip collar described in the present application, than the duct joint described in Williams. To join two duct sections together in Williams, slip collar 60, as shown in FIG. 4 of the Williams patent, is coated with an adhesive. As shown in FIG. 5 of the Williams patent, the duct sections are then joined to the adhesively coated slip collar 60. A sealant 84 is then coated on the

joined duct sections. Once joined, outer clamp portions 22, 24 are assembled around the slip collar 60 using bolts 50 (see FIG. 5). It is apparent that the process described in Williams uses at least six separate process steps. Compared to the Williams process which uses at least six process steps to form a duct joint, the slip collar that is described in the present application can use three or four process steps to form a duct joint. The slip collar that is described in the present patent application is a one-piece structure. The one-piece structure has slot regions and these regions can be coated with an adhesive. Once surfaces of the slip collar defining the slot region are coated, the two duct sections are inserted into the slot regions. Optional set screws may be used to secure the slip collar to the joined duct sections. Thus, the slip collar that is described in the present application can be used to form a joint more quickly than the components described in Williams. Consequently, significant amounts of time, labor, and money can be saved using the slip collar that is described in the present application, as compared to the duct joint that is described in Williams.

7. The resulting duct joint that is formed when using the slip collar described in the present application is stronger than the duct joint that is formed in Williams. Duct joints are often the weakest points of any duct system, and it is desirable to make sure that these weak points are as strong as possible. The duct joint described in Williams has multiple parts including an inner slip collar 60 and outer clamp portions which are joined by bolts 50 and adhesive layers. The regions where these multiple parts are joined can potentially fail. In comparison, the slip collar that is described in the present application is a one-piece structure and does not have joining regions like those described in Williams. I believe that the slip collar that is described in the present application is stronger and is less prone to failure than the duct joint described in Williams.

8. In summary, I believe that the slip collar that is described in the present application is not shown or suggested by Williams, and that the slip collar that is described in the present application has a number of advantages over the duct joint that is described in Williams.

Additionally, the First and Second Shea Declaration also provide for a number of non-obvious advantages over the prior art cited, such as the efficiency gains by not having to wrap the joint with external wrapping. Specifically, paragraphs 3 and 6 of the First Shea Declaration state:

The H-Collar™ line of joint products provide contiguous internal corrosion resistant liners and an alignment tool for joining corrosion and fire resistant duct and pipe in critical applications while also reducing installation time. Installation of duct or pipe work using the H-Collar™ joint products only requires application of an adhesive and inserting the duct into the collar. There is no need for additional external wrapping of the joint.

* * *

The H-Collar™ joint products are intended to provide a contiguous internal liner as well as a built-in alignment tool with no need for complicated processes or multi-part components to join two sections of duct. Prior to the introduction of H-Collar™ joint products, ATS offered its Internal Beaded Slip Collar™ joint products. Internal Beaded Slip Collar™ joint products are similar to structure 60 in FIG. 2 of the Williams patent assigned to ATS. (See Williams, United States patent number 5,961,154). Like the duct assembly in Williams, duct assemblies made with Internal Beaded Slip Collar™ joint products require multiple steps and separate external parts to ensure reliably sealed and structurally sound joints. As a result, installations of ducts using Internal Beaded Slip Collar™ joint products take considerably more time and are less reliable than installations of ducts using H-Collar Slip Collar™ joint products.

Paragraph 5 of the Second Shea Declaration continues:

The H-Collar™ was introduced in 2003 to allow contractors to install ATS duct without the need to do exterior wrapping of joints. Connecting joints in an expeditious and vapor-tight manner is of critical importance in semiconductor duct installations where cost and protection of personnel, processes and equipment are major concerns. Time and labor in ensuring a vapor-tight seal at each joint are major portions of the cost of duct installation. Use of the H-Collar™ in duct assemblies provides reliable joints that are easier and faster to install than other previous and contemporary techniques in such critical installations.

Accordingly, in view of the evidence of advantages of the claimed invention over the prior art provided in the Plecnik Declaration and the First and Second Shea Declarations, Appellants have rebutted any alleged *prima facie* case of obviousness.

iii. Long Felt Need

Finally, paragraph 7 of the First Shea Declaration provides evidence of a long felt need for duct joint products, such as H-Collar™ joint products, embodying the claimed invention:

I also believe that the H-Collar™ joint products helped to satisfy a long felt need. Previously, contractors had to spend much time fitting and joining ductwork with complicated multi-part and multi-step joint products which required careful and onerous alignment, fastening and sealing. Such extended installation procedures limited the amount of ductwork that installers could install on a given day, thus limiting their total annual job capacity. H-Collar™ joint products address this long felt need by allowing installers to more easily and quickly align, fasten and seal sections of ductwork in minutes.

Dr. Plecnik's declaration also supports the proposition that it "takes less time to assemble ducts using the slip collar described in the present application" than the slip collars in the prior art. Accordingly, in view of the evidence of long felt need of the claimed invention over the prior art provided in the Shea Declarations and the Plecnik Declaration, Appellants have rebutted any alleged *prima facie* case of obviousness.

C. Independent claim 36

In the final Office Action mailed on April 28, 2011, claim 36 was rejected under 35 USC 103 as being obvious over van Vliet in view of Wellman, Jacobson, Thomas, and Williams. Appellants respectfully disagree.

For similar reasons detailed above in section 7.B.1, the alleged 5-reference combination of van Vliet, Wellman, Jacobson, Thomas, and Williams used to reject independent claim 36 relies on improper hindsight.

Moreover, claim 36 is allowable because it recites limitation not taught or suggested by the prior art. Claim 36 is similar to claim 15 in that it recites a "tubular outer portion [that] includes a curved section comprising apertures, and wherein set screws are disposed in the apertures" and "a first adhesive composition in the slot region, and wherein a thickness of the outer wall portion is between about 3/16-inch to about 1-1/2 inches."

Accordingly, claim 36 is allowable for at least the reasons discussed above in sections 7.B.2, 7.B.3, and 7.B.4.

Finally, as detailed in section 7.B.5, Appellants have also submitted additional evidence of non-obviousness in the form of previously filed 37 CFR 1.132 Declarations of Jeff Shea, as filed on June 28, 2007 (“the First Shea Declaration”) and October 9, 2007 (“the Second Shea Declaration”), and Joe Plecnik, as filed on March 1, 2006 (“the Plecnik Declaration”). Even assuming, *arguendo*, that the Examiner can allege that the claims are obvious in view of the cited references, Appellants submit that the Declarations provide sufficient evidence to rebut any allegation of obviousness. In each of the Office Actions dated December 8, 2009, March 25, 2009 and October 27, 2010, the Examiner failed to even address the Shea and Plecnik Declarations as evidence of non-obviousness. The declarations are sufficient to overcome any alleged *prima facie* case of obviousness because they provide evidence of (1) commercial success; (2) non-obvious advantages over the prior art, and (3) long felt need for the claimed invention.

D. Dependent claims 40

At page 11 of the Office Action, claim 40 is rejected over the combination of van Vliet, Wellman, Williams, Jacobson, and Nishio (US 6,045,164).

The rejection depends on the improper combination of van Vliet, Wellman, Williams, and Jacobson. As noted above, this combination is deficient and the additional citation of Nishio fails to remedy the improper combination. Further, Appellants submit that the combination of six (6) references to reject the claim 40 is an indication that improper hindsight was used to reject the present claims. It is well known that “[one] cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.”) (quoting *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988)).

Therefore, claim 40 should be allowed.

E. Dependent claim 66

At pages 9-10, claim 66 is rejected over the combination of van Vliet, Wellman, Williams, and Jacobson. Appellants respectfully disagree.

Claim 66 is dependent on claim 65 and claim 15, and therefore recites that “the set screws are cone-shaped set screws with a cone-shaped tip and a tightening end” and “wherein the cone-shaped tips of the set screws, when tightened at the tightening ends, extend into the first slot region and contact an outer surface of the first duct to secure the first end section of the duct to the slip collar while the first adhesive composition disposed in the first slot region cures.”

The Office Action asserts that Jacobson teaches or suggests these limitations. However, Jacobson is silent about using set screws “while the first adhesive composition disposed in the first slot region cures.” The other references are similarly silent about the use of set screws while an adhesive composition cures.

Therefore, claim 66 should be allowed.

F. Dependent claim 69

At page 10, claim 69 is rejected over the combination of van Vliet, Wellman, Williams, and Jacobson. Appellants respectfully disagree.

Claim 69 is dependent on claim 36 and additionally recites “wherein the apertures extend inward toward the center of the tubular outer portion.” The Office Action asserts that:

“Regarding Claim 69, Jacobson et al., discloses using screws (ref. #7) that would penetrate (i.e., contact) through the apertures (ref. #5) (FIG. 1). It appears based on the screw (ref. #7) direction that the apertures on the top side must extend inward toward the center of the tubular outer portion (FIG. 1).”

Jacobson fails to show even a tubular outer portion. Rather, Jacobson is entirely directed towards square and rectangular ducts used for use in residential and commercial heating, ventilating, and air conditioning duct systems. See Col. 1, lines 40-43. The “corner member” shown in Figure 1 does not have a “tubular outer portion,” and therefore, also does not show that “the apertures extend inward toward the center of the tubular outer portion.” Figure 1 of Jacobson is reproduced below and shows the “holes 5” in the flat section of the corner member. See Fig. 1 (reproduced above).

Because Jacobson and the other cited reference fail to teach or suggest this limitation, claim 69 should be allowed.

8. CONCLUSION

For these reasons, it is respectfully submitted that the rejection should be reversed.

Respectfully submitted,

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9. CLAIMS APPENDIX

Claims 1.-14. (canceled).

Claim 15. (previously presented) A duct assembly comprising:

(a) a slip collar comprising (i) a tubular outer wall portion, (ii) a tubular inner wall portion, (iii) an intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion, (iv) a first slot region defined by the tubular outer wall portion and the tubular inner wall portion, and (v) a second slot region defined by the tubular outer wall portion and the tubular inner wall portion, wherein each of the tubular outer wall portion, the tubular inner wall portion, and the intermediate portion comprises a fiber reinforced plastic material, and wherein the first and second slot regions face away from each other, and wherein the slip collar is an integral, one-piece structure, and wherein the tubular wall outer portion includes a curved section including apertures, and wherein set screws are disposed in the apertures;

(b) a first duct including a first end inserted into the first slot region; and

(c) a second duct including a second end inserted into the second slot region, wherein the first end inserted into the first slot region and the second end inserted into the second slot region each have a constant diameter, and wherein the first and second ducts also comprise a fiber reinforced plastic material;

further comprising a first adhesive composition in the first slot region and a second adhesive composition in the second slot region, and wherein a thickness of the outer wall portion is between about 3/16-inch to about 1-1/2 inches.

Claims 16.-27. (canceled).

Claim 28. (previously presented) The duct assembly of claim 15 wherein the tubular inner wall portion comprises a chemically resistant material and the tubular outer wall portion comprises a fire-resistant material.

Claims 29.-32. (canceled).

Claim 33. (previously presented) The duct assembly of claim 15 wherein the inner wall portion and the outer wall portion comprise different polymeric materials.

Claim 34. (previously presented) The duct assembly of claim 15 herein the inner wall portion and the outer wall portion comprise different materials, and wherein the slip collar is free of metal.

Claim 35. (canceled).

Claim 36. (previously presented) A duct assembly comprising:

a slip collar comprising (i) a tubular outer wall portion, (ii) a tubular inner wall portion, (iii) an intermediate portion disposed between the tubular outer wall portion and the tubular inner wall portion, (iv) a slot region defined by the tubular outer wall portion and the tubular inner wall portion, wherein the tubular outer wall portion, the tubular inner wall portion, and the intermediate portion all comprise a fiber reinforced plastic material, and form an integral one-piece structure, and wherein the tubular outer portion includes a curved section comprising apertures, and wherein set screws are disposed in the apertures; and

a duct comprising a first end section, wherein the first end section of the duct is inserted into the slot region, and wherein the first end section has a constant diameter, wherein the set screws contact the first end section of the duct to secure the first end section of the duct to the slip collar, and wherein the duct comprises a fiber reinforced plastic material

further comprising a first adhesive composition in the slot region, and wherein a thickness of the outer wall portion is between about 3/16-inch to about 1-1/2 inches.

Claim 37. (previously presented) The duct assembly of claim 36 wherein the tubular inner wall portion comprises a chemically resistant material and the tubular outer wall portion comprises a fire-resistant material.

Claim 38. (previously presented) The duct assembly of claim 36 wherein the slip collar has only one slot region.

Claim 39. (previously presented) The duct assembly of claim 36 wherein the tubular inner wall portion is shorter than the tubular outer wall portion.

Claim 40. (previously presented) The duct assembly of claim 36 wherein the tubular inner wall portion comprises a fluoropolymer material.

Claim 41. (previously presented) The duct assembly of claim 36 wherein the inner wall portion comprises a cured vinyl ester resin and the outer wall portion comprises a cured phenolic resin.

Claim 42. (previously presented) The duct assembly of claim 36 further comprising an adhesive composition in the slot region.

Claim 43. (previously presented) The duct assembly of claim 42 wherein the adhesive composition comprises a novalac or an epoxy resin.

Claim 44. (previously presented) The duct assembly of claim 36 wherein the slip collar is free of a metal.

Claim 45. (previously presented) The duct assembly of claim 36 wherein the fiber reinforced plastic material comprises chopped strand mat.

Claim 46. (previously presented) The duct assembly of claim 36 wherein the slip collar is formed first, and after the slip collar is formed, the first end of the duct is inserted into the slot.

Claim 47. (previously presented) The duct assembly of claim 15 wherein the slip collar is formed first, and wherein after the slip collar is formed, the first end of the first duct is inserted into the first slot region and the second end of the second duct is inserted into the second slot region.

Claim 48. (previously presented) The duct assembly of claim 15 wherein the slip collar is formed by a process comprising the steps of:

- applying a first mixture of resin and fabric material around a mandrel to form the tubular inner wall portion;

- positioning at least two spacer elements separated by a gap around the tubular inner wall portion;

- applying a second mixture of resin and fabric material around the tubular inner wall portion within the gap to form the intermediate portion;

- applying a third mixture of resin and fabric material around the intermediate portion and the spacer elements to form the tubular outer wall portion;

- cutting the tubular inner wall portion, the intermediate portion, the spacers and the tubular outer wall portion;

- removing the tubular inner wall portion, the intermediate portion, the spacer elements and the tubular outer wall portion from the mandrel; and,

- removing the spacers.

Claim 49.(previously presented) The duct assembly of claim 48 wherein the first, second and third mixtures of resin and fabric are substantially identical.

Claim 50. (previously presented) The duct assembly of claim 48 wherein the first and second mixtures of resin and fabric are substantially identical.

Claim 51. (previously presented) The duct assembly of claim 48 wherein the second and third mixtures of resin and fabric are substantially identical.

Claim 52. (previously presented) The duct assembly of claim 36 wherein the interior surface of the tubular outer wall portion and the surface of the tubular inner wall surface facing the slot region are smooth.

Claim 53. (previously presented) The duct assembly of claim 15 wherein the fiber reinforced plastic material is impregnated with fibers made of a material selected from the group consisting of graphite, carbon and ceramic.

Claim 54. (previously presented) The duct assembly of claim 15 wherein the slip collar is curved.

Claim 55.-56. (canceled)

Claim 57. (previously presented) The duct assembly of claim 36 further comprising an adhesive between the slip collar and the duct, and around the set screws.

Claim 58. (previously presented) The duct assembly of claim 15 further comprising an adhesive between the slip collar and the first duct, and around the set screws.

Claim 59. (previously presented) The duct assembly of claim 36, wherein thickness of the inner wall portion is between about 1/10-inch to about 2/10 inch.

Claim 60. (previously presented) The duct assembly of claim 36, wherein the apertures are positioned in pairs comprising a first aperture and a second aperture for each pair, wherein the first aperture of each pair is located on a side opposite of the outer wall portion as the second aperture of each pair.

Claim 61. (previously presented) The duct assembly of claim 15 wherein the apertures are only in the curved section.

Claim 62. (canceled)

Claim 63. (previously presented) The duct assembly of claim 15 wherein the set screws are inserted into the apertures and contact the first end of the first duct that is inserted into the first slot region.

Claim 64. (previously presented) The duct assembly of claim 63 wherein the set screws are inserted into the apertures and contact the second end of the second duct that is inserted into the second slot region.

Claim 65. (previously presented) The duct assembly of claim 15 wherein the set screws are cone-shaped set screws with a cone-shaped tip and a tightening end.

Claim 66. (previously presented) The duct assembly of claim 65 wherein the cone-shaped tips of the set screws, when tightened at the tightening ends, extend into the first slot region and contact an outer surface of the first duct to secure the first end section of the duct to the slip collar while the first adhesive composition disposed in the first slot region cures.

Claim 67. (previously presented) The duct assembly of claim 36, wherein thickness of the inner wall portion is between about 5/16-inch to about 1/10 inch and the inner wall comprises vinyl ester or isophthallic resin.

Claim 68. (previously presented) The duct assembly of claim 40 wherein the fluoropolymer material comprises a film with a thickness in a range from about 0.001 inch to about 0.010 inch.

Claim 69. (previously presented) The duct assembly of claim 36, wherein the apertures extend inward toward the center of the tubular outer portion.

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PATENT
Atty. Dkt. No. 87462-669925 (000710US)

10. EVIDENCE APPENDIX

11. RELATED PROCEEDINGS APPENDIX

Not applicable.